SimIFEx MINOS+ Report

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Where MINOS/MINOS+ Stands

- We currently use Texas computing to generate single interactions
  - Output files are moved to FNAL for overlay processing (in which single interactions are joined to form spills that more resemble reality) and reconstruction
- Using Daikon_10 version of our Monte Carlo
  - NEUGEN3 Fortran based framework
  - Virtual Monte Carlo – GEANT3 for detector simulation
  - Efforts to move to a newer MC version
- Using FLUGG to simulate the neutrino beam flux

Future Action Items

- Texas continues to serve as source for generating single interactions
  - Might be push to move to OSG submission, given manpower and available resources

- Hops version of Monte Carlo
  - Would move from Fortran base to C++ GENIE
  - C++ integration would remove another relic of Fortran
  - Would like to see work effort resume, but understand that given conference season, time is limited
    - Aim to restart in Q3 2014
  - Would like to know an ETA from this point
  - Moving to Hops opens up additional resources to MINOS
    - CVMFS, FTS, OSG tools become available

Other Future Items

- GEANT4 for detector simulation
  - Implementation and testing with VMC framework would take additional manpower
- GEANT4 physics lists and beam simulation
  - Interest in seeing how physics lists developed for neutrino experiments perform
  - Studies are already going on under the guise of NuMI-X consortium, but we are interested in this at the experiment level
- MINOS has been using FLUKA for beam flux simulation
  - Test of GEANT4 lists could yield transition
    - The main benefit here being the software is supported by the lab, and as such, tech guidance is immediately available